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Author(s)	Tokioka, Takasi; Nishikawa, Teruaki
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CONTRIBUTIONS TO THE JAPANESE ASCIDIAN FAUNA. XXXI
A NEW DEEP-WATER STYELID FROM SURUGA BAY[1)]

TAKASI TOKIOKA and TERUAKI NISHIKAWA

Seto Marine Biological Laboratory

With Text-figures 1–2

A specimen of strange *Cnemidocarpa* was submitted to the first author for identification by Dr. Tadashi Kubota of the Fisheries Institute of Tokai Univesrity. It was obtained from the depth of 1025 m in Suruga Bay. Our examinations proved that the animal was a form of the *finmarkiensis* group of the genus. Although its morphological features mostly fall within those ranges of *Cnemidocarpa finmarkiensis* (Kiaer, 1893), the test appearance of the specimen seems quite unique, and for this, we have come to the conclusion that the specimen might represent a new species. Before going further into the description we want to express our cordial thanks to Dr. Kubota for a chance of examining such an interesting specimen.

Cnemidocarpa tenerispinosa n. sp.

Holotype: 44 mm long individual found attached to a black stone 18 cm × 13 mm in size; locality 34°49.3′N and 138°34.9′E in Suruga Bay, 1025 m deep; March 19, 1976; preserved in alcohol and deposited at the museum of Tokai University, Sp. No. MSMINV-77001.

The animal is rather large, markedly depressed dorso-ventrally; 44 mm long, 36 mm wide and 12 mm in thickness, and attached to the substratum by its whole ventral side. It is roughly oval in outline (Fig. 1 A) and surrounded by peripheral extensions of the test, thin and to about 10 mm in breadth at the maximum, but around the anterior portion. The test is very thin, extremely so on the side of attachment, whitish and translucent, and looks like a kind of parchment; the surface is quite smooth and free from any foreign materials, but is furnished with many small, soft finger-shaped protuberances all over the body and though sparsely even on the peripheral test extensions. These protuberances (Fig. 1 B) are 0.5 mm in length at the maximum and with the basal portion somewhat swollen, denser in both siphonal areas but decrease their size there. Their medullary portion is rather pointed distally like a spine and coloured yellowish brown. The peripheral test extensions are generally dotted with minute white spots. Both apertures are sessile,

1) Contributions from the Seto Marine Biological Laboratory, No. 646.

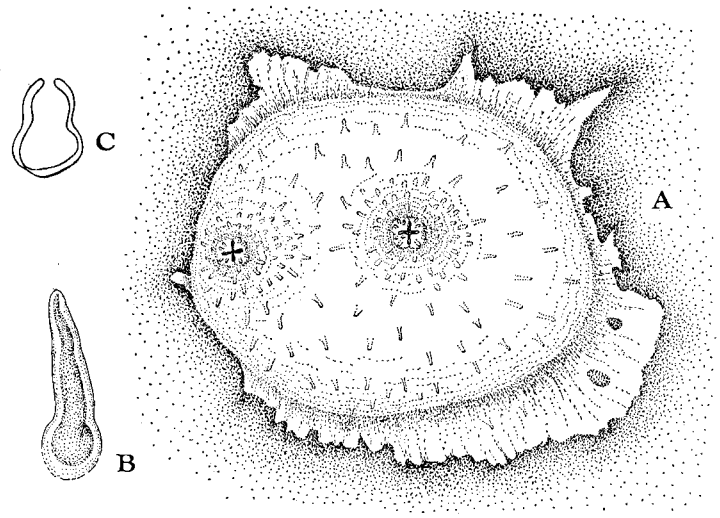

Fig. 1. *Cnemidocarpa tenerispinosa* n. sp. A: Entire animal. B: One of finger-shaped protuberances on test surface. C: Ciliated groove.

clearly 4-lobed, and separated from each other for about a half of the body length; the branchial aperture is subterminal and the atrial a little posterior to the middle of the body.

The mantle body is 43 mm long and 35 mm wide, the mantle is thin and translucent on the dorsal side, but extremely thin and quite transparent on the ventral side, the internal structures are seen through it nearly completely (Fig. 2 B). Small endocarps are distributed all over the inner surface of the mantle, most densely in the left posterior half of the body as shown in Fig. 2. Many fine atrial tentacles are found along the edge of the atrial velum (fig. 2A). Tentacles are about 15 when only the larger ones are counted, small and minute ones may be found in some intervals in the ventral half of the tentacular ring. Tentacles themselves are rather large, but very soft, and issued from the margin of the tall tentacular membrane (Fig. 2 A). The ciliated groove is simply U-shaped (Fig. 1 C). The edge of the prominent dorsal lamina is plain at the very anterior part of the lamina, but is serrated in most other parts.

Inner longitudinal vessels are arranged as follows on four branchial folds on respective sides:

Left	D 3 (28) 7 (16) 7 (22) 6 (13) 6 V.
Right	D 9 (26) 5 (19) 6 (20) 12* (11) 5 V.

Several vessels in the middle part of the interspace (shown by an asterisk) between the right 3rd and 4th folds are somewhat gathered and these might be considered to represent a rudimentary fold. However, this does not seem to be the case; rather this may probably be caused simply by folding of the branchiall sac along its right extremity. About seven thinner vessels of three orders are found between each pair of thicker ones; parastigmatic vessels are present. Stigmata in a mesh are

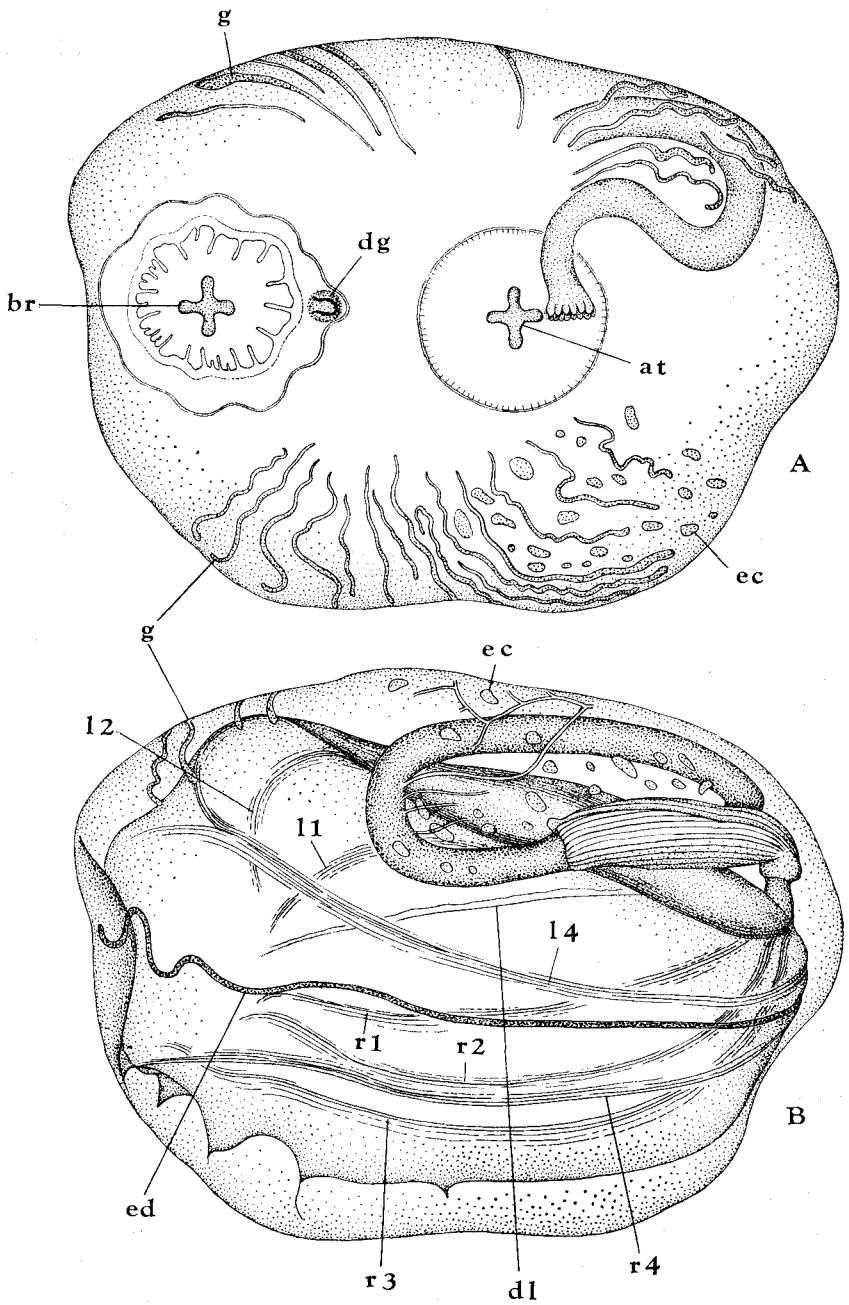

Fig. 2. *Cnemidocarpa tenerispinosa* n. sp. A: Dorsal half of mantle body, inside; gonads (g), dorsal ganglion (dg), tentacular ring, peripharyngeal band, atrial velum, rectum and endocarps (ec), partly are shown. br–branchial aperture, at–atrial aperture. B: Ventral side of mantle body; first loop of alimentary canal, endostyle (ed), dorsal lamina (d1) and respective branchial folds (l1-l4, r1-r4) are clearly observed through mantle. l1–first left fold, r1–first right fold.

generally about 5, though up to 10 in the meshes along the left side of the endostyle.

The intestinal loop is rather small as seen in the text-figure (Fig. 2 B). The anterior end of the intestinal loop extends somewhat over the middle of the body; the first loop is wide and the second loop is clearly defined (Fig. 2 A). The stomach is elongate and slightly longer than a half of the intestinal loop; about 15 plications can be counted in the ventral half; the pyloric coecum is small but distinct. The anal margin is cut into 15 lobules.

Gonads are all thin and long, 15 on the right and 12 on the left side. Testicular follicles are arranged in two rows on the attachment side in thicker parts of some gonads.

Remarks: Evidently, the present specimen belongs to the species group of *Cnemidocarpa finmarkiensis* (Kiaer, 1893). And as already given in detail by Hartmeyer (1923), *C. finmarkiensis* is very extensive in both morphological variation and distribution. In fact, most structures in the present specimen are included in the range of morphological variation in *finmarkiensis*, though the number of gonads (12–15) in the present specimen seems a little larger than the maximal one (12 on a side) recorded in *finmarkiensis*. The body size attaining to 44 mm in the present specimen is also a little larger than the known maximal size (40 mm) given by Johnson and Snook (1927, cited from Van Name, 1945, p. 266). The habitat is much deeper in the present specimen (1025 m) than in *finmarkinesis* (540 m in Sagami Bay, Hartmeyer 1923). Above all, the appearance of the test that is quite smooth and furnished with a number of small finger-shaped protuberances differs distinctly from any features of the test ever described in *finmarkiensis*. The present specimen can therefore be separated from *finmarkiensis*, inclusive of *elsa* (Hartmeyer, 1906), *joannae* (Herdman, 1898) and *stimpsoni* (Ritter, 1900), safely. The serrated dorsal lamina, one of the significant characteristics of *C. finmarkiensis* has also been reported in *C. bythia* (Herdman, 1882) from 4000 to 7000 m deep in the waters near Australia and northern Atlantic, *Cnemidocarpa* sp. (Millar, 1970) from 931 to 938 m deep in the southern Indian Ocean, *C. macrogastra* (Oka, 1935) from the waters around Japan, *C. monnioti* Beniaminson, 1971 and *C. heterotentaculata* Beniaminson, 1971 from the Japan Sea. Although the first two species are easily distinguishable from *C. finmarkinesis* by much fewer gonads, the last three, as well as *C. floccosa* (Sluiter, 1904) recorded recently by Kott (1972b) from Moreton Bay, may be included in the variation range of the number of gonads in *finmarkiensis*.

As known well, the test surface of many species of the genus *Cnemidocarpa* is provided with low prominences or tubercles, or hairy or rooty processes carrying foreign matters, further "irregular conical projections" (Van Name, 1945, p. 273) are observed on the test surface in *C. verrucosa* (Lesson, 1830), or the spines up to 0.1 mm long are reported all over the test surface and "sucker-like papillae extending about one-quarter of the body length from each side of the branchial aperture" (Kott, 1969, p. 110) of the test in *C. zenkevitchi* Vinogradova, 1958; but so far as we have checked, such finger-like protuberances as noted in the present new species from Suruga Bay have never been described in any species of the genus. For these reasons,

it is proposed here to name the present specimen as a new species, *tenerispinosa* after the existence of a number of small soft finger-shaped protuberances. A symbiotic gammaried was found in the peribranchial cavity and two parasitic copepods in the branchial sac.

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